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ABSTRACT

The hypothesis that actual physical involvement (hands-on experience) with the work of a craft will influence the occupational goals of students was tested. The subjects were 2,921 ninth-grade students in Connecticut who were enrolled during 1974-1975 in sixteen area vocational-technical schools which offer Trade and Industrial occupational programs. For admission purposes, these students completed a form on which they indicated their first and second choices of careers. With few exceptions, all these students participated in a shop exploration program in which time is spent in each of the trades offered at the school. In the shop they perform some of the simpler tasks as well as participate in the theory lessons associated with the trade. After a cycle of rotating in each of the six to fifteen trades offered, a tentative shop assignment is made. The assignment is based on each student's choice, the shop teacher's evaluation, and the availability of shop stations. The findings indicated that 55.9% of 2,847 students changed their career choice after the cyclical portion of the program. Also, 85.4% of the students were assigned to the shop of their choice. The findings show some evidence that students will change their occupational goals and narrow their career choices as a result of these hands-on experiences. (EM)

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A SURVEY OF "HANDS ON" EXPLORATION

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Herbert Righthand
Connecticut State Department of Education
April 11, 1979

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A SURVEY OF "HANDS ON" EXPLORATION

This survey, a sub-section of a larger study, sought to confirm the hypothesis that actual physical involvement ("hands on" experience) with the work of a craft will influence the occupational goals of students. This study was limited to the trade areas taught in the respective schools involved and was based on the students indications of changes in their career choices.

The term "exploration" has been considered and used by counselor and vocational psychologists since 1908 (Jordaan, 1963). In this same article, Jordaan also reports that the National Vocational Guidance Association in 1924 stated that exploratory experiences, offering sample tasks from a number of occupations, were crucial to career selection since they affect persons' thinking about themselves and about certain occupations. Since the recent emphasis on career education, there has been a great deal of study of occupational exploration and other techniques for assisting a student in making a career choice. A quick review of research since 1973, dealing with exploration of careers, showed practically all studies dealing with the process of exploration rather than the outcome. Those dealing with outcomes were based mainly on inventories of vocational maturity, attitude changes and self-concept modifications. Obviously, these studies are very vital at this time since they provide guidelines for the conduct of exploratory programs and test various theories dealing with occupational decision making.

One "in-house" annual report (Dorsey, 1972-1978) conducted at one of the Connecticut vocational schools, during the period from 1972 to 1978, followed the simple method of this paper and obtained similar results. As a study being conducted for administrative purposes, it also recorded the trade instructors' evaluations of the students, parental consent on changes of career and a record of changing trade interest for this period. Another "in-house" study (Nelson, 1977) dealt with the problem of limited time for exploration and with students' recommendations concerning the exploration process, particularly in sheet metal and graphics. He found that the students considered the exploratory procedure worthwhile but felt that a longer cycle, field visits and greater use of audio-visual methods would improve the program. The longer cycle and the field visits were not feasible from an administrative view point. This study also obtained some responses of graduates who indicated that they chose a trade because "it seemed interesting."

The data obtained were available in a longitudinal study of the admission practices of sixteen area vocational-technical schools operated by the State of Connecticut. All applicants for admission to these schools completed a form on which they indicated their first and second choices of careers. Since the occupational programs offered at these schools are generally classified as T & I (Trade and Industrial), these students had already delimited their career interest. The subjects in this analysis were the total ninth grade population of 2,921 who were in school in 1974-1975.

With very few exceptions (approximately 50), all students participated in this program of spending some time in each of the trades offered. The exceptions were in some schools where facility and staff limitations made it necessary to exclude certain shops. In the shop they perform some of the simpler tasks as well as participating in the theory lessons associated with the trade. Throughout this period of exploration, occupational information is provided by the trade instructor and the guidance counselor.

The manner of conducting the shop exploration varies from school to school. All schools operate on an alternating program basis, spending one week or more in a shop followed by an equal time in the academic program. The schools curriculum offers three-year programs in over thirty T & I fields leading the freshman year for exploration. The program of exploration starts at the beginning of the school year with rotating assignments into each of the trades offered, then ends with a tentative shop assignment which can be changed without affecting the length of the school program. Trade offerings at each school range from 6 to 15. The rotation cycle ranges from 4 to 10 days at 7 hours per day per shop. At the end of this cycle, after guidance sessions with the counselor, the student once more is asked to identify his/her choice of trades. The student's choice, the shop teacher's evaluation and the availability of shop stations are weighed, and the student is tentatively assigned to a shop. Vocational guidance is continued, as needed. During the balance of the year the student can still make a shop change, if facilities allow it.

In order to avoid any intrusion of privacy, students in this class were identified by ID numbers. The frequency of a shop selection was then recorded and analysis was conducted by individual selection and by shop enrollment. A shop enrollment change (Appendix A) before and after exploratory provides data concerning shop popularity and assists the administrator in planning staffing and equipment and helps the guidance staff in vocational counseling. This approach does not indicate the extent of changes by individuals. A shop showing no change in selection may have had two students choosing this shop and then with these two changing their minds and two others indicating their preference for this trade, the number of shop selections before exploratory and after remain the same. The individual analysis compared the individual students' original choices with their choices after exploration (Appendix B). If the selection was different it was considered a change. To avoid duplication, only changes from the original shop choice were counted. In both cases, shop and individual analyses, the number assigned to each trade area was obtained and the percent of students being assigned to the shop of their choice was recorded.

Of the 2,921, accepted students, there were 74 "invalid" trade choices, which could or could not be counted in the analysis (Appendix A). Forty-two of these selected exploratory as their first choice indicating an awareness of the school program and possibly some career indecision. In addition to these there were 22 who selected post-secondary programs for which they would not be eligible at this time. This reduced the number of "valid" first choices to 2,847. Of this number 1590 changed their minds after the cyclical portion of the exploratory program. This resulted in a change percent of 55.9%. If *all* changes from original selection were considered the percent of change for the 2,921 would be 57%. Further analysis (Appendix C) indicated that 85.4% were assigned to the shop that they had selected after the cyclical portion of the exploration. The remaining 14.6% (385) (Appendix C), who after exploration and career guidance select a shop to which they are not assigned, represent a group worth further study to observe whether this action leads to greater attrition or poorer achievement for this group than for the balance who are assigned in the area of their choice. The 1,660 who indicated occupational choices on application and did not obtain this assignment whether because of their own changed attitude or school limitations provide another group to be followed. (Appendix D)

The apparent success of this program has encouraged the schools to expand this approach by offering summer exploratory programs to students of local schools. This program is offered in the summer after the student has completed the seventh grade. It enables the student to decide the question of seeking this type of schooling or not. This program was originally offered by one school, then in 1977 in five schools; in 1978, it was offered in 12 schools serving 11,773 pupils. The program is offered for four hours per day for four days per week and for four weeks. Students are selected cooperatively by LEAs and the vocational-technical schools. The program requires participation in all shops available. Another value of this exploration is that males and females are both cycled to the same shop programs which exposes them to the traditionally male or female trades, and thus helps to combat sex stereotyping.

The shop analysis of the students' choices (Appendix F) yielded additional information important to the administrators and guidance counselors. For instance the most popular shops according to the students' first choices on admission were in this order: carpentry, auto mechanics, and electrical. After exploration this order was changed to carpentry, machine, and auto mechanics. The ranking according to shop assignments was machine, auto mechanics, and carpentry. It is interesting that these changes were consistent with the job market at that time showing few opportunities in carpentry and high unemployment in the building trades but a shortage of skilled personnel in the machine tool trades. The most stable shops in terms of student consistency, showing the least change from their first choice were health occupations, machine tool, and beauty culture. (Appendix A) The evidence in the shop analysis indicates that the guidance provided in this exploratory program tends to be somewhat directive and, fortunately, is based on job market information which should serve the student more effectively.

These data do not provide a complete picture of the effect of the exploration. Further study dealing with the success of the students in the school program and subsequently on the job would provide a more valid basis for judging the effectiveness of this program. These findings raise further questions such as: 1) do the students who changed their trade choices succeed more so than those who did not? 2) do the students who fail to obtain the trade of their choice tend to fail or drop out of school or the job?

We have some evidence that students will change their occupational goals as a result of these "hands on" experiences, and thus narrow down their career choices. Whether these changes are permanent and benefit the student is still unknown. Other factors affecting changes which might be influential in the results obtained and suggest caution in the interpretation are: 1) variability and short duration of the shop experience; 2) attitude and qualifications of instructors who are highly skilled and motivated craftsmen; 3) possiblity of influences other than the shop work exposure, such as instructor's personality, peer influence, parental, and/or sex stereotype pressures or possibly some other influence. A study in process at this time by a staff member is seeking to obtain some of this information through structured interviews.

There is little question that a better design for research could be developed, but this was an analysis of an existing and operating program and as such provides an evaluation of the effectiveness of this program and the contribution of "hands on" experiences.

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APPENDIX A

ANALYSIS BY SHOP

CHANGES IN FIRST CHOICE
AFTER EXPLORATORY

Shop	FIRST CHOICE Before Exploratory	After Exploratory	Change N	Change %
Machine	114	323	209	183
Screw Machine	2	1	−1	−50
Draft. Mach.	118	151	33	28
Carpentry	650	348	−302	−47
Graphic Commun.	40	100	60	150
Plmng.	107	149	42	39
Painting	3	3	0	0
Electrical	388	314	− 74	− 19
Mjr. Applnce.	11	12	1	9
Fashion Design	58	41	− 17	− 29
Food Trades	41	64	23	56
Auto.	461	315	−146	− 32
Masonry	17	14	− 3	− 18
Beauty Culture	160	138	− 22	− 14
Hmkng.	3	7	4	133
Sheet Metal	18	29	11	61
Arch. Draft.	45	33	− 12	− 27
Indust. Chem.	5	12	7	140
Oil Burner	−−	3	3	−−
Air Cond.	52	62	10	19
Baking	8	6	− 2	− 25
Avionics	17	12	− 5	− 29
Elect. Mech'l	9	10	1	11
Auto Body	61	91	30	49
Electronics	358	292	− 66	− 18
Htng. & Piping	5	15	10	200
Health Occup.	45	49	4	9
Elect. Indust.	51	41	− 10	− 20
Aircraft Mech.	1	0	− 1	−100
Exploratory	52	0	− 52	−100
Welding	4	0	− 4	−100
Dental Tech.	5	0	− 5	−100
Dental Asst.	4	0	− 4	−100
Pract. Nurse	8	0	− 8	−100
Total	2921	2635	286	
Blank	57	343		

APPENDIX B

ANALYSIS BY INDIVIDUAL

CHANGES IN FIRST CHOICE

AFTER EXPLORATION

Shop	First Choice Before Exploratory	Changed After Exploration	
	N	N	%
Machine	114	34	29.8
Screw Machine	2	2	100.0
Draft Mach.	118	67	56.8
Carpentry	650	391	60.2
Graphic Comm.	40	22	55.0
Plumbing	107	57	53.3
Painting	3	3	100.0
Electrical	388	216	55.7
Mjr. Appliance	11	8	72.7
Fashion Design	58	35	60.4
Food Trades	41	27	65.9
Auto Mech.	461	253	54.9
Masonry	17	15	88.2
Beauty Cult.	160	59	36.9
Homemaking	3	1	33.3
Sheet Metal	18	13	72.2
Draft. Arch.	45	29	64.4
Indust. Chem.	5	2	40.0
Oil Burner	–	–	–
Air Cond.	52	37	71.2
Baking	8	8	100.0
Avionics	17	13	76.5
Electrical-Mech.	9	9	100.0
Auto. Body	61	42	68.9
Electronics	358	212	59.2
Heating & Piping	5	4	80.0
Health Occup.	45	8	17.8
Indust. Electcty.	51	23	45.1
All Shops	2847	1590	55.9
Post Secondary Choices and Exploratory			
Aircraft Mech.	1	1	100.0
Welding	4	4	
Dental Tech.	5	5	
Dental Asst.	4	4	
Pract. Nurse	8	8	
Exploratory	52	52	
Grand Total	2921	1664	57.0

APPENDIX C

ANALYSIS BY INDIVIDUAL

AFTER EXPLORATORY 1st CHOICE
AND
SHOP ASSIGNMENT

Shop	Ist Choice	Not Receiving Choice	
	N	N	%
Machine	323	21	6.5
Screw Machine	1	0	0.0
Draft. Mach.	151	11	7.3
Carpentry	348	78	22.4
Graphic Commun.	100	15	15.0
Plmg. Stm. Fit.	149	20	14.1
Pntg. Decortg.	3	0	0.0
Electrical	314	52	16.6
Mjr. Appl.	12	0	0.0
Fashion Desgn.	41	4	36.4
Food Trades	64	5	7.8
Auto. Mech.	315	42	13.3
Masonry	14	2	14.3
Exploratory	0	0	100.0
Beauty Culture	138	4	2.9
Homkg.	7	3	42.9
Sheet Metal	29	3	10.4
Draft. Arch.	33	1	3.0
Indust. Chem.	12	0	0.0
Oil Burning	3	1	33.3
Air Cnd. Rfg.	62	4	6.5
Baking	6	0	0.0
Avionics	12	5	41.7
Electro Mech.	10	1	10.0
Auto Body	91	27	29.7
Electronics	292	57	19.5
Htng. Piping	15	1	6.7
Health Occup.	49	6	12.3
Elect. Indust.	41	22	53.7
All Shops	2635	385	14.6

APPENDIX D

ANALYSIS BY INDIVIDUAL

FIRST CHOICE BEFORE EXPLORATORY
AND
SHOP ASSIGNMENT

Shop	1st Choice	Not Receiving Shop Assignment of Choice	
	N	N	%
Machine	114	37	32.5
Screw Machine	2	2	100.0
Draft. Mach.	118	67	56.8
Carpentry	650	429	66.0
Graphic Commun.	40	22	55.0
Plmg. Stm. Fit.	107	58	54.2
Phtg. Decortng.	3	3	100.0
Electrical	388	234	60.3
Mjr. Appl.	11	8	72.7
Fashion Dsgn.	58	30	51.7
Food Trades	41	28	68.3
Auto. Mech.	461	260	56.4
Masonry	17	12	70.6
Beauty Culture	160	45	28.1
Homkng.	3	1	33.3
Sheet Metal	18	12	66.7
Draft. Arch.	45	26	57.8
Indust. Chem.	5	2	40.0
Oil Burning	0	0	100.0
Air Cond. Rfg.	52	34	65.4
Baking	8	7	87.5
Avionics	17	15	88.2
Electro-Mech.	9	9	100.0
Auto. Body	61	44	72.1
Electronics	358	228	63.7
Htg. Piping	5	4	80.0
Health Occup.	45	7	15.6
Elect. Indust.	51	36	70.6
All Shops	2773	1660	59.9
Aircraft	1	1	0.0
Welding	4	4	0.0
Dental Tech.	5	5	0.0
Dental Asst.	4	4	0.0
Pract. Nurse	8	8	0.0
Exploratory	52	52	0.0
Grand Total	2847	1734	60.9

APPENDIX E

SUMMARY
OF
Changes in Shop Choices Before and After Exploratory
And
Final Trade Assignments

Before Exploratory				After Exploratory			Trade Assignments		
Rank	Course	No.	Percent	Shop	No.	%	Shop	No.	%
1	Carpentry	650	22.2%	Carpentry	348	13.2%	Mach.	426	15.6%
2	Auto	461	15.8%	Mach.	323	12.3%	Auto	313	11.4%
3	Elect'l	388	13.3%	Auto	315	12.0%	Carpentry	302	11.0%
4	Elect'ncs	358	13.3%	Elect'l	314	12.0%	Elect'l	287	10.5%
5	Beauty C.	160	5.5%	Elect'ncs	292	11.1%	Elect'ncs	263	9.6%
6	Draft. M.	118	4.0%	Draft. M.	151	5.7%	Draft. M.	180	6.6%
7	Mach.	114	3.9%	Plmbng.	149	5.7%	Beauty C.	152	5.6%
8	Plmbng.	107	3.7%	Beauty C.	138	5.2%	Plmbng.	149	5.5%
Other Shops (24)*		565	19.3%	Other Shops (21)*	605	23.0%	Other (21)*	664	24.3%
Total		2921			2635			2736	

* Number of remaining shops.